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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/533,648

05/05/2005

Thomas Blaffert

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PHILIPS INTELLECTUAL PROPERTY & STANDARDS
595 MINER ROAD
CLEVELAND, OH 44143

EXAMINER

TORRES, JOSE

ART UNIT

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2624

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/533,648	Applicant(s) BLAFFERT ET AL.	
	Examiner JOSE M. TORRES	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 May 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>05/05/2005</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Comments

1. The Preliminary Amendment filed on May 5, 2005 has been entered and made of record.

Abstract

2. The abstract of the disclosure is objected to because it has more than 150 words as required by 37 C.F.R. § 1.72, ("The abstract in an application filed under 35 U.S.C. § 111 may not exceed 150 words in length."), and it must commence on a separate sheet of paper following the claims. Examiner recommends replacing the cover page of PCT/IB03/005090, being referred in the current application as the abstract, with one that only contains Section (57) of the cover page of the PCT Application, and not exceeding 150 words in length. See MPEP § 608.01(b).

Appropriate correction is required.

Specification

3. The disclosure is objected to because of the following informalities:
 - Page 1 Line 5: Section heading "Background of the Invention" is missing.
 - Page 2 Line 4: Section heading "Summary of the Invention" is missing.

- Page 7 Line 7: Section heading "Brief description of the Drawings" is missing.
- Page 8 Line 8: Section heading "Detailed Description" is missing.

4. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 C.F.R. § 1.75(d)(1) and MPEP § 608.01(o).

Correction of the following is required: claim limitations "means for combining a plurality of pixels", "means for forming at least one pixel list", "means for forming a filtered secondary image data set", and "means for forming the rendering from the secondary image data set" in Claim 9 lines 3, 6, 8 and 10, respectively.

Appropriate correction is required.

Claim Rejections - 35 USC § 101

5. 35 U.S.C. § 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

6. The USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows (see also MPEP 2106):

Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and

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Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data.

When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory) and *Warmerdam*, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory).

In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See *Lowry*, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

7. Claim 1-10 rejected under 35 U.S.C. § 101 because the claimed invention is directed to non-statutory subject matter.

Claims 1-8 are rejected under 35 U.S.C. § 101 as not falling within one of the four statutory categories of invention. Supreme Court precedent¹ and recent Federal Circuit decisions² indicate that a statutory "process" under 35 U.S.C. § 101 must (1) be tied to another statutory category (such as a particular apparatus), or (2) transform underlying subject matter (such as an article or material) to a different state or thing. While the instant claim(s) recite a series of steps or acts to be performed, the claim(s) neither transform underlying subject matter nor positively tie to another statutory category that accomplishes the claimed method steps, and therefore do not qualify as a statutory process. For example, the steps to be performed should be implemented on a computer or a device having a processor capable of performing the recited steps. Any amendment to the claim should be commensurate with its corresponding disclosure.

¹ *Diamond v. Diehr*, 450 U.S. 175, 184 (1981); *Parker v. Flook*, 437 U.S. 584, 588 n.9 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972); *Cochrane v. Deener*, 94 U.S. 780, 787-88 (1876).

Claim 9 is rejected under 35 U.S.C. § 101 because the claimed invention is directed to non-statutory subject matter as follows. Claim 9 appear to define an apparatus using “means plus function” claim language. However, the specification does not disclose corresponding physical structure associated with each claim element, and the specification does indicate that the invention may be embodied as pure software, “a computer program with program means for carrying out said steps of the method” (Page 6 line 29 through Page 7 line 5). Therefore, the claim as a whole appears to be nothing more than a collection of software elements, thus defining functional descriptive material per se.

Functional descriptive material may be statutory if it resides on a “computer-readable medium or computer-readable memory”. The claim(s) indicated above lack structure, and do not define a computer readable medium and are thus non-statutory for that reason (i.e., “When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized” – Guidelines Annex IV). The scope of the presently claimed invention encompasses products that are not necessarily computer readable, and thus NOT able to impart any functionality of the recited program. The examiner suggests:

1. Amending the claims to embody the program on “computer-readable medium” or equivalent; assuming the specification does NOT define the computer

² *In re Bilski*, 88 USPQ2d 1385 (Fed. Cir. 2008).

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readable medium as a “signal”, “carrier wave”, or “transmission medium” which are deemed non-statutory (refer to “note” below); or

2. Pointing out where the corresponding structure can be found in the specification that would clearly be indicative of a statutory apparatus, in a 112 6th paragraph sense.

Any amendment to the claim should be commensurate with its corresponding disclosure.

Claim 10 is rejected under 35 U.S.C. § 101 because the claimed invention is directed to non-statutory subject matter as follows. Claim 10 defines “A computer program” embodying functional descriptive material (i.e., a computer program or computer executable code). However, the claim does not define a “computer-readable medium or computer-readable memory” and is thus non-statutory for that reason (i.e., “When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized” – Guidelines Annex IV). The scope of the presently claimed invention encompasses products that are not necessarily computer readable, and thus NOT able to impart any functionality of the recited program. The examiner suggests amending the claim(s) to embody the program on “computer-readable medium” or equivalent; assuming the specification does NOT define the computer readable medium as a “signal”, “carrier wave”, or “transmission medium” which are deemed non-statutory

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(refer to “note” below). Any amendment to the claim should be commensurate with its corresponding disclosure.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vincent et al. (“Watersheds in Digital Spaces: An Efficient Algorithm Based on Immersion Simulations”, IEEE Transactions of Pattern Analysis and Machine Intelligence, Vol. 13, No. 6, June 1991, pp. 583-598) in view of Baatz et al. (U.S. Pat. No. 6,832,002).

As to claims 1 and 9, Vincent et al. teaches a method/device (“conventional computers”, Section VI. Conclusion and Prospects, Page 596) for the formation of a selective rendering of body structures of an object to be examined from a primary image data set, which method/device comprises the steps of: means for combining a plurality of pixels so as to form at least one pixel group (FIG. 15, “*Separation of the overlapping components*”) which comprises each time pixels which are associated with the pixel group in conformity with predetermined filter criteria (“*distance function*”, Section V.

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Examples of Application, A. *Use of Watersheds in Image Segmentation*, Page 592), means for forming a filtered secondary image data set in which the pixels of the pixel groups formed are marked ("performing on *I* an alternating sequential filtering", Section V. Examples of Application, A. *Use of Watersheds in Image Segmentation*, Page 592), and means for forming the rendering from the secondary image data set (Fig. 16(d)), the marked pixels ("*marking function*") being rendered separately, notably in highlighted or suppressed form ("the watershed image can be regarded as an image of contours, some of which having to be suppressed.", Section V. Examples of Application, A. *Use of Watersheds in Image Segmentation*, Page 592).

However, Vincent et al. does not explicitly disclose the means for forming at least one pixel list by selection and/or deselection of at least one pixel group.

Baatz et al. teaches the means for forming at least one pixel list (FIGs. 2 and 4) by selection and/or deselection of at least one pixel group ("merging" and exclusion", Col. 14 lines 23-29 and Col. 16 lines 15-21). Baatz et al. also teaches forming a filtered secondary data set in which the pixels of the pixel groups of the at least one pixel list formed are marked (FIG. 1, "step **S140**", Col. 14 lines 6-22). It should be noted that Baatz et al. method is performed on a conventional computer as it is well known in the art and taught at least in Vincent et al.

Therefore, in view of Baatz et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Vincent et al. by incorporating the method step and the means for forming at least one pixel list by selection and/or deselection of at least one pixel group in order to a digital picture

processing application that recognize coherent picture segments, thereby offering substantially more information for a subsequent classification (Col. 1 lines 18-29).

It should be noted that claim 9 does not invoke 35 U.S.C. § 112, sixth paragraph since the claimed invention is not properly disclosed in the Specification so as to define an apparatus using “means plus function” claim language (See Claim Rejections 35 U.S.C. § 101 Section above).

As to claim 2, Vincent et al. teaches a plurality of image regions is defined, wherein the pixels overlap at least partially (FIG. 15, “separation of the partially overlapping objects”, Section V. Examples of Application, A. *Use of Watersheds in Image Segmentation*, Page 592).

As to claim 3, Baatz et al. teaches a plurality of pixel groups is defined, characterized in that wherein a combination data tree (FIG. 2) is formed by assigning each pixel group (“picture objects”) to a node(“a”, “b” and “c”), and that the nodes are logically assigned to one another in conformity with a predetermined combination criterion (“conforming or not conforming”) and the selection and deselection are performed by selection and/or deselection of the nodes (Col. 14 lines 6-51).

As to claim 4, Baatz et al. teaches the logic combination of two nodes takes place if all pixels of the pixel group associated with one node are also contained in the pixel group associated with the other node and/or if the pixel groups associated with the

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two nodes are not situated more than a predetermined distance apart (Col. 14 lines 6-51).

As to claim 5, Baazt et al. teaches the logic combination is performed by mutual combination of pixel groups in the form of a hierarchically structured combination tree (FIG. 16), where each pixel group is assigned a node of a lower level, at least one higher level is defined, nodes of a respective lower level are combined with a node of a hierarchically higher level if all pixels of the pixel group associated with the lower node are also contained in the pixel group associated with the node of the higher level and/or if the pixel groups associated with the nodes of the lower level are not situated more than a predetermined distance apart (Col. 19 line 65 through Col. 20 line 17).

As to claim 6, Baazt et al. teaches the formation of the filtered secondary image data set is performed by selection and deselection of nodes of different levels ("merging" and "exclusion", Col. 14 lines 6-51 and Col. 16 lines 9-40).

As to claim 7, Vincent et al. teaches the combination of the pixels in the at least one pixel group is performed by means of the watershed transformation ("watershed transformation") which comprises the following steps: forming a gradient image data set ("image grad(*I*)") in which each pixel is assigned a gradient image value which corresponds to the difference between the image value of this pixel in the primary image data set and the image value of the pixels surrounding this pixel ("the gray tone is

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varying quickly compared to the neighborhood”), and defining the pixel group by defining a gradient image region of neighboring pixels which are separated from one another by a local maximum of the gradient image values (“A morphological gradient I' was then determined, which is the supremum of three directional gradients.”, Section V. Examples of Application, *A. Use of Watersheds in Image Segmentation*, Page 592).

As to claim 8: Baazt et al. teaches there is formed a plurality of hierarchically structured combination data trees (“simultaneous representation of the segmentation in various degrees of resolution and in the form of a hierarchical object structure”) whose nodes are logically combined in conformity with at least one combination criterion, notably if all pixels of the pixel group associated with the lower node are also contained in the pixel group associated with the node of the higher level, and/or if the pixel groups associated with the two nodes are not situated more than a predetermined distance apart, that the combination criteria of the combination trees differ in respect of at least one combination criterion, and that the formation of the pixel list takes place by selection and deselection of nodes of at least one, but preferably several different levels in the combination trees (Col. 14 lines 6-51, Col. 16 lines 9-40 and Col. 20 lines 37-63).

As to claim 10, Vincent et al. teaches a computer program (“algorithm”) for the formation of a selective rendering of body structures from a primary image data set, which computer program comprises program means which execute the steps of the method disclosed in claim 1 when the program is run on a computer (“conventional

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computer”, Section III. Proposed Algorithm, Section VI. Conclusion and Prospects, Pages 587 and 596).

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hu et al. disclose a Method and System for Segmentation of Medical Images.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOSE M. TORRES whose telephone number is (571)270-1356. The examiner can normally be reached on M-F: 8:00am - 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on 571-272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/Jingge Wu/

Supervisory Patent Examiner, Art Unit 2624

/JOSE M. TORRES/

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Examiner, Art Unit 2624